ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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July 5, 2006

Assistant Chief of Staff for Installation Management
Base Realignment and Closure Division
ATTN: Michael G. Drumheller
600 Army Pentagon
Washington, DC 20310-0600

Re: Army Request to Conduct a Pilot Study for Leachate Disposal at Landfills 6 and 7 at the Former Fort Sheridan Army Base Fort Sheridan, Illinois

0970555001/Lake Fort Sheridan (BRAC) Superfund/Technical

Dear Mr. Drumheller:

The Illinois Environmental Protection Agency (Illinois EPA or Agency) is in receipt of the Army's request to conduct a 3-year Pilot Study to dispose of leachate generated within Landfills 6 and 7 at Fort Sheridan. It was dated March 7, 2006 and was received via electronic mail on that same day. The Army' intent, as stated, is to find a creative leachate disposal solution that is protective of human health and the environment. The proposed Pilot Study calls for land application of the leachate onto a 2-acre parcel of land surrounding Building 100, but not to include the area of Landfills 6 and 7 that would be part of the recently completed cap. Duration of the proposed study would be three years. The request was not a detailed work plan, but an overview of the general plan.

Illinois EPA has reviewed the submitted Pilot Study request and has generated the following list of Applicable or Relevant and Appropriate Regulations (ARARs) and other information.

1) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121(d)(2) specifies that on-site Superfund remedial actions shall attain other Federal standards, requirements, criteria, limitations, or more stringent State requirements that are determined to be legally applicable or relevant and appropriate (ARAR) to the specified circumstances at the site. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR Parts 300 to 399) is CERCLA's implementing regulation. The NCP mandates that ARARs must be identified by the State

and attained as threshold criteria as part of the remedy selected by the responsible party during CERCLA remedial response activities (40 CFR 300.430(D)(3), 300.430(E)(9)(i), and 300.430(f)(1)(i)(A)).

Title 35 Illinois Administrative Code (35 IAC), Subtitle G, contains State of Illinois ARARs pertaining to the generation, management and disposal of hazardous and non-hazardous waste (35 IAC Subtitle G, Chapter I, Subchapters c and i), otherwise known as the RCRA regulations. The State's RCRA hazardous waste regulations have been adopted in large part as pass through legislation from 40 CFR Parts 260-268, although certain requirements make Illinois' RCRA program more stringent than the federal RCRA program. USEPA has delegated primacy to the Illinois EPA for implementation of the RCRA program.

Media contaminated by past disposal practices at Landfills 6 and 7 are, at a minimum, solid waste pursuant to the Illinois Environmental Protection Act (415 ILCS 5/3.53). Because the contaminated media meets the definition of a waste and if it is generated as part of a removal or remedial action, the contaminated media also meets the definition of a pollution control waste (415 ILCS 5/3.27). By definition, pollution control waste is also a special waste (415 ILCS 5/4.35). The contaminated media (leachate) at Landfills 6 and 7, which by Illinois statute and regulation is at least a special waste, may also be categorized as RCRA hazardous by listing or characteristic (415 ILCS 5/3.220 and 35 IAC Part 721).

Information provided to Illinois EPA to date indicates that disposal of waste within Landfills 6 and 7 terminated prior to implementation of RCRA. (The Resource Conservation and Recovery Act was passed in 1976 and the RCRA regulations implementing Subtitle C, establishing the hazardous waste management system, first became effective on November 19, 1980.) Since the contaminated media in Landfills 6 and 7 were disposed before the effective date of RCRA, the RCRA hazardous waste regulations would not be applicable to those disposal activities, but may be considered relevant and appropriate.

Illinois standards applicable to generators of hazardous waste are found in 35 IAC Part 722. A person who generates a solid waste as defined in 35 IAC 721.102 shall determine if that waste is hazardous using the methods prescribed in 35 IAC 722.111. The Illinois EPA has no direct knowledge of how the contaminated media came to be located within Landfills 6 and 7 or about any specific industrial process for which the contaminants were used. Furthermore, no hazardous waste determination pursuant to 35 IAC 722.111 has been made. Therefore, the status of the contaminated media within the landfills, or the leachate generated there from, being classified as a listed hazardous waste is not known to Illinois EPA.

Illinois EPA does find that the contaminated media within Landfills 6 and 7 and the leachate therein are hazardous substances, as that term is defined in CERCLA Section 101(14). The proposed pilot study, therefore, will involve active treatment, storage, or disposal of hazardous substances. The RCRA hazardous waste regulations may be applicable to active management of these hazardous substances if they are determined to be hazardous wastes. The hazardous substances may exhibit one or more toxicity characteristics of hazardous waste including but not limited to D028, D029, D039, D040, or D043. Pursuant to 35 IAC 722.111(c) the generator, the Army, must determine if the waste materials are hazardous by characteristic prior to any treatment, storage or disposal activities. If the generator determines that the waste is hazardous by characteristic, he must manage the wastes in accordance with 35 IAC Subtitle G, Chapter I, Subchapter c.

2) As part of the current Operation and Maintenance Plan for Landfills 6 and 7, the leachate is sampled and analyzed on a quarterly basis. This practice must continue for the proposed Pilot Study to be considered. In addition, it will be necessary to collect and analyze a sample of the leachate directly from within the collection tank used for irrigation prior to irrigation at the same frequency. This analysis must include testing to determine if it is characteristically hazardous. The leachate cannot be used for irrigation if it is a hazardous waste.

   There are five 10,500-gallon leachate collection tanks in place. Leachate is currently being generated at ~1500 gallons per day. Given the amount of time that the leachate could be in residence in the tanks prior to application, as much as two to three weeks incorporating only 3 of the 5 tanks, the chemical make up of the leachate could change significantly in that time period. Any volatile compounds would have time to convert to a gaseous state and any suspended solids would have sufficient time to settle out. Therefore, it is important to identify exactly what is in the leachate to be applied to the ground surface.

3) The study area should be off limits to the general public. Given the contaminant concentrations known to be found within the leachate, a chain link fence and a 24-hour surveillance system would not be required. However, there does need to be some type of fencing to deter passersby from wandering into the treatment area. Additionally, there should be some type of signage to warn unauthorized personnel not to enter the area.

4) The treatment unit must be located entirely within the already-specified buffer zone for the landfills and the maximum depth of the treatment zone must be no more than 1.5 meters (5 feet) from the initial soil surface and more than 1 meter (3 feet) above the seasonal high water table.

5) The use of water (leachate) to irrigate the specified two-acre parcel would also be considered a waste water disposal practice, and as such, a demonstration must be made showing the practice does not cause groundwater in the area to exceed applicable groundwater quality standards. Since the two-acre area does not lie in a groundwater management zone and has not been reclassified by adjusted standard pursuant to 35 IAC 620.260, the applicable standards would be the Class I Groundwater Standards as identified in Section 620.410. Current groundwater quality standards for pollutants of concern are:

Pollutant	Standard
Chloride	200 mg/L
Iron	5.0 mg/L
Manganese	0.15 mg/L
Sulfates	400 mg/L
Total Dissolved Solids	1,200 mg/L

The Army would be required to install groundwater monitoring wells, a minimum of one upgradient and three down gradient, and sample each well, at least quarterly, demonstrating compliance with the Class I groundwater standards or no statistical deviation from background concentration, whichever is less stringent. A monitoring program roughly equivalent with that being conducted for Landfills 6 and 7 would be required and should be detailed in an approved work plan. This requirement does not preclude the provisions found in 35 IAC Sections 615 and 616.

6) Application of leachate would have to be done at a time and in a manner to prevent runoff. Time periods when leachate must not be used for irrigation include, but would not be limited to, time periods when precipitation is imminent, or when the soil is saturated or with ponded water, or when the ground is frozen or ice or snow covered. Additionally, no more than 13,600 gallons per acre could be irrigated on any given day and no more than 27,200 gallons per acre could be irrigated during any consecutive week. A complete written operating record of volume applied and dates of application must be kept to document that these restrictions have not been exceeded.

7) The regulatory requirements under 35 IAC 811.309(c) and (d) are also relevant and appropriate regarding the standards for leachate storage systems and the standards for onsite treatment and pretreatment. Therefore, they must be complied with as well.

8) In order to determine any possible impact of the irrigation on soil in the unsaturated zone of the study area, random soil cores must be collected and analyzed before and at least semi-annually during the active portions of the study. Since the pilot study cannot

proceed during the winter months, it is expected that soil core samples will be collected before initiation of the study, one month after initiation, and shortly after completion. That data would be used to determine not only the contaminant concentrations, but also to monitor soil characteristics such as pH, attenuation capacity, soil saturation limits, total organic carbon content, etc. Ultimately, the proposed disposal method should not have a statistically significant adverse affect on any of those parameters. As is the case for the groundwater monitoring, the soil core monitoring should have a sampling program spelled out in an approved work plan.

9) The proposed irrigation system for land treatment is acceptable. However, Illinois EPA believes that a determination as to the Pilot Study's effectiveness could be made after only one year of implementation, rather than the three years that have been proposed. Therefore, the duration of the Pilot Study should be limited to one calendar year or one application season. Continuation beyond the pilot study end point would require issuance of an Explanation of Significant Differences (ESD) to the Final Record of Decision (ROD) for Landfills 6 and 7 and the required public input. (It is anticipated that the Final ROD will have been completed by the time the Pilot Study concludes.)

10) The use of any irrigation system connected to a potable water supply is prohibited.

11) This acceptance is dependent on the continued lack of vinyl chloride detections within the leachate. Should the leachate again be determined to contain vinyl chloride at some point in the future, the irrigation system would be required to be shut down immediately and the Agency notified. The leachate would then be required to be disposed by some other approved method (currently it is trucked off-site) until such time as the vinyl chloride again ceases to be detected or until it can be shown, either by direct measurement or through modeling that there is no unacceptable risk to human health or the environment via the volatilization of any vinyl chloride present to the ambient air.

12) This authorization shall be for the proposed two-acre plot identified in the proposal only. Authorization to utilize leachate for irrigating the landfill vegetative covering has not been given. A specific request must be made to allow irrigation of the landfill vegetative covering with all the necessary information, after it has been shown that the 1-year Pilot Study did work as designed with no adverse effects to the soil or groundwater in the area. However, as there are significant differences between the proposed two-acre plot and the landfill vegetative cover, it is unlikely that irrigation of the landfill vegetative cover using leachate would be considered acceptable.

Prior to implementation of the proposed Pilot Study, Illinois EPA requests a complete design be submitted showing the structure of the plumbing system to conduct the irrigation, the current and proposed future vegetation to be planted in the two-acre site, the monitoring wells, and their

locations, to be installed and monitored, as well as, the program for groundwater and soil monitoring, and at least a draft Standard Operating Procedure (SOP) for implementation of the irrigation system. The SOP should provide instruction on when and how the irrigation system will be operated and specific guidance/rules for when not to operate it. It is understood that the actual procedure will require some manipulation at the beginning of the study to optimize its use, but it is important to have set instructions from which to begin.

Additionally, the Army should draft a Technical Memorandum (Tech Memo) to document the proposed temporary change in the leachate disposal method and should provide within the Tech Memo justification for attempting the study and the expected result of a successful trial, which would be to make the temporary change a permanent one. The Tech Memo should be included in the Administrative Record and should be provided to the public for comment. A formal Restoration Advisory Board (RAB) meeting should be held after the Tech Memo has been issued, but prior to initiation of the Pilot Study.

There also needs to be submitted a Work Plan including a Sampling and Analysis Plan (SAP) and a Quality Assurance Project Plan (QAPP) providing procedures for all of the required sampling and analysis activities and quality assurance/quality control checks. However, since there is already an approved SAP and QAPP in place at Fort Sheridan, the Army should be able to amend those documents to include the activities for the Pilot Study fairly easily.

If you have any questions regarding this correspondence, you may contact me at 217/557-8155 or via e-mail at Brian.Conrath@epa.state.il.us.

Sincerely,

Brian A. Conrath

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